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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,795	09/18/2003	Steven Francis Best	AUS920030447US1	9023

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EXAMINER	
NGUYEN, TANH Q	

ART UNIT	PAPER NUMBER
2182	

DATE MAILED: 08/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/666,795	BEST ET AL.	
	Examiner	Art Unit	
	Tanh Q. Nguyen	2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimer filed on June 1, 2006 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of any patent granted on Application Number 10/697,899 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-8, 11-15, 18, 19-22, 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Kano et al. (US 6,725,328).

4. As per claim 1, Kano teaches in a computer system having I/O components and a file system [col. 3, lines 22-25; col. 5, lines 23-39] existing within a volume group comprised of storage media [FIG. 1], a method for substantially preventing I/O failure due to insufficient storage space within the file system, said method comprising:

determining that a received I/O operation directed at said file system requires more storage space than is currently available within said file system [NO from step

6003, FIG. 6];

dynamically expanding the storage space available within said file system to increase the size of the file system [capacity-expandable file system: col. 5, lines 23-39] based on the amount of additional space required within the file system [dynamically allocating a storage domain of an appropriate capacity: col. 2, lines 2-3] to accommodate said I/O operation, wherein additional space on said volume group is allocated to said file system only when the size of an existing space **for a particular LBA** on the file system is not sufficient to accommodate the I/O operation [step 6004, FIG. 6; FIG. 14; FIG. 15; Col. 8, line 46-col. 9, line 10]; and

subsequently completing said I/O operation within said file system [step 6005, FIG. 6];

wherein said dynamically expanding step and said subsequently completing step are both completed without user input and/or activation [col. 2, lines 15-19; col. 10, lines 44-46].

5. As per claims 2-10, Kano teaches said dynamically expanding step includes assigning reserve storage space existing within said volume group to a logical volume hosting said file system [step 8001, FIG. 8; col. 6, lines 34-39];

said subsequently completing step comprises restarting said I/O operation within kernel space (after expansion) without requiring user input [step 6005, FIG. 6];

issuing a notification indicating that said dynamically expanding step is being completed [steps 6004-6005 of FIG. 6 show I/O processor part being notified of dynamic expansion; col. 1, lines 34-37];

signaling a logical volume manager (LVM) of a need for a specific size of additional storage space within the file system [segment size, block size] for completing said I/O operation [I/O detector part issuing a capacity increase command - step 7001, FIG. 7]; completing an automatic expansion of a logical volume hosting said file system, wherein said dynamically expanding step expands said file system into at least the specific size of available space within said logical volume following said automatic expansion [col. 2, lines 2-3; step 8001, FIG. 8; col. 6, lines 34-39];

said signaling step is completed via an I/O failure response (FR) daemon [1231 - FIG. 1] that coordinates communication between control blocks in a kernel space [1130, 1131, 1132 - FIG. 1] and the LVM [1131, 1232, 1233, 1235 - FIG. 1].

said determining step comprises parsing parameters from an I/O command for a size of required storage space to complete said I/O operation [step 6002, FIG. 6]; comparing said required storage space with an available storage space size within said file system [step 6003, FIG. 6]; and triggering the dynamic expansion only when the size of available storage space is less than the required storage space [step 6004, FIG. 6];

said dynamically expanding step comprises determining that said additional storage space is available within a reserve space [step 8001, FIG. 8; col. 6, lines 34-39] and expanding said file system to include a preset amount of space (a segment) from said reserve space;

said expanding step includes iteratively expanding said file system by said preset amount of space until a total space within said file system is sufficient to accommodate said I/O operation [col. 1, lines 8-10; col. 1, lines 47-51; col. 4, lines 39-41; FIG. 8];

said dynamically expanding step comprises calculating an amount of additional space required to complete said I/O operation, with consideration of currently available space within said file system; and dynamically expanding said file system by at least said amount of additional space required [col. 2, lines 2-3].

6. As per claims 11-17, the claims are system claims that generally correspond to method claims 1-6, 8-10 above and are rejected on the same basis.

7. As per claim 18, see the rejection of claim 7 above. Kano further teaches an I/O controller [1230, FIG. 1; col. 5, lines 48-52] and OS functional logic [col. 3, lines 29-33] being used in determining whether more storage space is needed, the LVM [1131, 1232, 1233, 1235 - FIG. 1] including a capacity controller part, and the I/O failure response (FR) daemon [1231, FIG. 1] bridging a communication between the I/O controller [1230, FIG. 1] at an OS level [1131, 1132 - FIG. 1] and the LVM [1131, 1232, 1233, 1235 - FIG. 1] at an application level [1110, FIG. 1].

8. As per claims 19-23, claims 19-20 are claims for a computer program product that generally correspond to method claims 1-3 above and are rejected on the same basis. As per claim 21, see the rejections of claims 1, 3-6 above. As per claims 22-23, see the rejections of claims 1, 7-9 above.

9. As per claim 24, Kano teaches signaling a complete failure of said I/O operation when there is not sufficient space within said reserve space [step 8006, FIG. 8; 10005, FIG. 10].

10. As per claim 25, see the rejection of claim 10 above.

Response to Arguments

11. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

12. Applicant's arguments are further not persuasive because the features upon which applicant relies (i.e., the availability of existing space at a different LBA within the volume would not be considered when allocating additional storage space for the particular LBA) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tanh Q. Nguyen whose telephone number is 571-272-4154. The examiner can normally be reached on M-F 9:30AM-7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Huynh can be reached on 571-272-4147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

August 15, 2006

TQN
August 15, 2006